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EXAMINER	
FEELY, MICHAEL J	

ART UNIT	PAPER NUMBER
1712	19

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Please find below and/or attached an Office communication concerning this application or proceeding.

A-8-12

Office Action Summary	Application No.	Applicant(s)	
	09/945,125	FRATER, MARK S.	
	Examiner	Art Unit	
	Michael J Feely	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) *1-8 and 17-40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-15 and 41* is/are rejected.

7)☒ Claim(s) *16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *02 June 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5,6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Claims 1-8 and 17-40 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 11.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 11, 13, and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 11, 13, and 14 include an *organic* graphite lubricant. Graphite is typically categorized as an inorganic material in the prior art. It is unclear what phrase "*organic* graphite" is referring to, and whether or not it is a material that stands apart from standard graphite materials. Furthermore, the specification does not refer to the graphite material as "*organic* graphite", and the specification fails to provide any clarification regarding what is meant by "*organic* graphite".

Claim Language Suggestions

4. Independent claim 9 is drawn to "A sheet laminate material"; however, dependent claims 10-16 refer to an "entry material" of claim 9. The original version of claim 9 was drawn to an

"entry material", but the claim language has been amended to remove the word "entry". For consistency reasons, it is suggested that claims 10-16 are amended as well, to refer back to "a sheet laminate material".

Claim Language Interpretation

5. Claims 9-16 and 41 include the following preamble language: "A sheet laminate material *for drilling a printed circuit board.*" A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In the instant case, the preamble merely recites the intended use of the laminate structure, and structural limitations are able to stand-alone. Therefore, in the following prior art rejections, the preamble language has not been accorded any patentable weight.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language;
>
> or
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who

> has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 9 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Newman et al. (US Pat. No. 4,313,996).

Regarding claim 9, Newman et al. disclose a sheet laminate material comprising: a first metal sheet (Abstract); a second metal sheet (Abstract); and a fibrous core (Abstract; column 4, lines 1-7); said fibrous core coupled to said first metal sheet with a first adhesive layer (Abstract; column 3, lines 47-58); said fibrous core coupled to said second metal sheet with second adhesive layer (Abstract; column 3, lines 47-58); wherein said adhesive contains a particulate lubricant (column 4, lines 8-12).

Regarding claim 41, Newman et al. disclose a sheet laminate material comprising: a first substrate layer (Abstract); a second substrate layer (Abstract); and a fibrous core (Abstract; column 4, lines 1-7); said fibrous core coupled to said first metal sheet with a first adhesive layer (Abstract; column 3, lines 47-58); said fibrous core coupled to said second metal sheet with second adhesive layer (Abstract; column 3, lines 47-58); wherein said adhesive contains a particulate lubricant (column 4, lines 8-12).

8. Claims 9, 12, and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Miller et al. (US Pat. No. 6,200,074).

Regarding claims 9 and 12, Miller et al. disclose ***(9)*** a sheet laminate material comprising: a first metal sheet (column 3, lines 1-6 and 21-22); a second metal sheet (column 3, lines 1-6 and 21-22); and a fibrous core (column 3, lines 6-7); said fibrous core coupled to said first metal sheet with a first adhesive layer (column 6, lines 6-9); said fibrous core coupled to said second metal sheet with second adhesive layer (column 6, lines 6-9); wherein said adhesive contains a particulate lubricant (column 3, lines 15-20); ***(12)*** wherein said particulate lubricant comprises polyethylene glycol (column 3, lines 15-20).

Regarding claims 41, Miller et al. disclose ***(41)*** a sheet laminate material comprising: a first substrate layer (column 3, lines 1-6 and 21-22); a second substrate layer (column 3, lines 1-6 and 21-22); and a fibrous core (column 3, lines 6-7); said fibrous core coupled to said first metal sheet with a first adhesive layer (column 6, lines 6-9); said fibrous core coupled to said second metal sheet with second adhesive layer (column 6, lines 6-9); wherein said adhesive contains a particulate lubricant (column 3, lines 15-20).

Claim Rejections - 35 USC § 102/103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 9-11, 14, and 41 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dana et al. (US Pub. No. US 2002/0123285 A1).

Regarding claims 9-11 and 14, Dana et al. disclose ***(9)*** a sheet laminate material (paragraphs 0026-0027) comprising a fibrous core (paragraph 0033), a first adhesive layer (paragraph 0033), and a second adhesive layer (paragraph 0033), wherein said adhesive contains a particulate lubricant (paragraphs 0033, 0047 and 0050); ***(10)*** wherein said adhesive comprises epoxy resin (paragraphs 0033 and 0035); ***(11)*** wherein said particulate lubricant comprises graphite homogeneously dispersed through out said adhesive (paragraphs 0033, 0047 and 0050); and ***(14)*** wherein said graphite has a diameter of approximately 3 microns to approximately 50 microns (paragraph 0033).

Dana et al. do not explicitly disclose first and second metal sheets, wherein said fibrous sheet is coupled to said first and second metal sheets with the adhesive layers. Dana et al. disclose "electronic supports", which include "clad laminates" (paragraph 0027). As shown in paragraphs 0199 and 0201 of the Examples section in Dana et al. "clad laminates" are laminate materials having outer metal layers, typically copper outer layers. In an embodiment where "clad laminates" are made, these metal layers would have been inherently coupled to the fibrous core (prepreg layer) with the adhesive layers (epoxy matrix material). Such a structure would have resembled the structure in Figure 1 (described in paragraph 0033) in Dana et al. with the addition of outer metal layers on each outer face of the matrix material.

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious to one of ordinary skill in the art at the time of the invention.

Regarding claim 41, Dana et al. disclose a sheet laminate material (paragraphs 0026-0027) comprising a fibrous core (paragraph 0033), a first adhesive layer (paragraph 0033), and a second adhesive layer (paragraph 0033), wherein said adhesive contains a particulate lubricant (paragraphs 0033, 0047 and 0050).

Dana et al. do not explicitly first and second substrate layers, wherein said fibrous sheet is coupled to said first and second disclose substrate layers with the adhesive layers. Dana et al. disclose "electronic supports", which include "clad laminates" (paragraph 0027). In an embodiment where "clad laminates" are made, metal layers would have been inherently coupled to the fibrous core (prepreg layer) with the adhesive layers (epoxy matrix material). Such a structure would have resembled the structure in Figure 1 (described in paragraph 0033) in Dana et al. with the addition of outer substrate layers on each outer face of the matrix material.

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious to one of ordinary skill in the art at the time of the invention.

Claim Rejections - 35 USC § 103

11. Claims 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US Pat. No. 6,200,074).

Regarding claim 15, Miller et al. are silent regarding the laminate material of claim 12, wherein the lubricant comprises approximately 0.1% to approximately 10% by weight of polyethylene glycol homogeneously dispersed throughout the adhesive. Miller et al. teach the use of polyethylene glycol; however, they fail to disclose a concentration in terms of weight percent.

Filler concentration is a known result effective variable when it is dispersed polymer materials, such as adhesives. Fillers are added to enhance certain properties of a resin system, so a minimum quantity is required to provide the resin system with the desired property. However, too much filler jeopardizes the structural properties and mechanical integrity of the resin system. Fillers are always added in a concentration that provides the desired properties, while maintaining satisfactory structural properties and mechanical integrity of the resin system.

Applicant fails to show criticality of the claimed concentration range. It has been found that without a showing of unexpected results, and where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation – *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA); and *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious to one of ordinary skill in the art at the time of the invention.

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dana et al. (US Pub. No. US 2002/0123285 A1).

Regarding claim 13, Dana et al. are silent regarding the laminate material of claim 11, wherein the lubricant comprises approximately 0.1% to approximately 10% by weight of graphite homogeneously dispersed throughout the adhesive. Dana et al. teach the use of graphite; however, they fail to disclose a concentration in terms of weight percent.

Filler concentration is a known result effective variable when it is dispersed polymer materials, such as adhesives. Fillers are added to enhance certain properties of a resin system, so a minimum quantity is required to provide the resin system with the desired property. However,

too much filler jeopardizes the structural properties and mechanical integrity of the resin system. Fillers are always added in a concentration that provides the desired properties, while maintaining satisfactory structural properties and mechanical integrity of the resin system.

Applicant fails to show criticality of the claimed concentration range. It has been found that without a showing of unexpected results, and where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation – *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA); and *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious to one of ordinary skill in the art at the time of the invention.

Allowable Subject Matter

13. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 16, the prior art fails to teach or suggest the laminate material of claim 12, wherein said polyethylene glycol lubricant has a molecular weight from approximately 600 to approximately 4,000. Miller et al. is the closest prior art reference. Miller et al. specifically teach the use of a "high molecular weight polyethylene glycol", which appears to teach away from the claimed limitation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Feely whose telephone number is 703-305-0268. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Michael J. Feely
June 12, 2003

Robert Dawson
Supervisory Patent Examiner
Technology Center 1700